

National Water Conditions

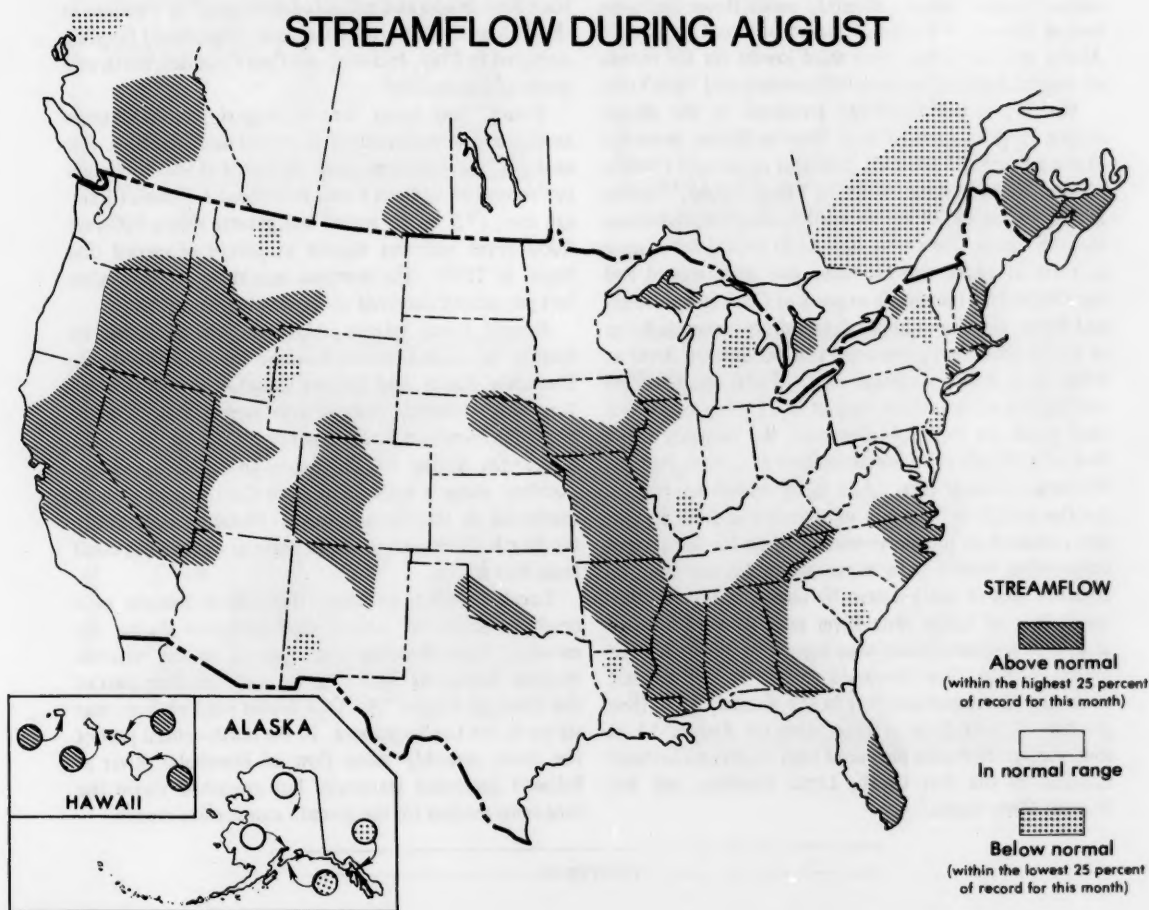
(Formerly the Water Resources Review)

UNITED STATES
Department of the Interior
Geological Survey

CANADA
Department of the Environment
Water Resources Branch

AUGUST 1982

STREAMFLOW DURING AUGUST



Streamflow decreased seasonally in most of the United States and southern Canada during August. Severe flooding occurred in parts of Illinois, Missouri, and Tennessee, where several streams had peak discharges not likely to be exceeded more than once (on the average) in 100 years or more. Monthly mean flows were in the normal range or above that range at over 90 percent of the index stations during the month.

Reservoir storage generally decreased but remained above the long-term average at most of the index reservoirs.

STREAMFLOW CONDITIONS DURING AUGUST 1982

Streamflow increased seasonally in Arizona, and increased at some index stations and decreased at others in Colorado, Connecticut, Hawaii, Illinois, Louisiana, Maine, Missouri, New Jersey, New Mexico, New York, and Texas. Monthly mean flows generally decreased seasonally elsewhere in the United States and in most of southern Canada. Flows remained in the below-normal range in parts of Alaska, British Columbia, Quebec, and New Mexico, and decreased into that range in several small areas at scattered locations throughout the conterminous United States. Monthly mean flows that were second lowest for period of record occurred in parts of Alaska and flows that were third lowest for the month of August occurred in parts of Louisiana and New York.

Monthly mean discharges remained in the above-normal range in parts of most Western States, in several States adjacent to Missouri, and also in parts of Florida, Hawaii, Massachusetts, Michigan, Rhode Island, Virginia, British Columbia, New Brunswick, and Saskatchewan. Monthly mean flows were highest of record for August in parts of Idaho and Montana, and were second and third highest for the month in parts of California, Hawaii, and Wyoming. For example, the monthly mean discharge of 9,530 cubic feet per second (cfs) at Salmon River at White Bird, Idaho (drainage area, 13,550 square miles) was highest of record for August in 72 years of record. (See graph on page 3.) Similarly, the monthly mean flow of 5,657 cfs at Yellowstone River at Corwin Springs, Montana (drainage area, 2,623 square miles) was highest for the month in 77 years of record and flow at that site remained in the above-normal range for the second consecutive month. In northeastern Kansas and the adjacent area of southeastern Nebraska, where monthly mean flow of Little Blue River near Barnes (drainage area, 3,324 square miles) was highest of record for the month of July, flow decreased sharply to 140 percent of median in August and was in the normal range. (See graph.) Runoff from intense rains on August 13 in southeastern Nebraska produced high stages and lowland flooding in the Salt Creek, Little Nemaha, and Big Nemaha River basins.

In western Missouri, rapid runoff from nearly 16 inches of rain at Raytown, a suburb of Kansas City, caused extreme flooding in the Little Blue River basin on August 13. The peak discharge of 34,900 cubic feet per second at Little Blue River near Lake City (drainage area, 184 square miles) was several times greater than the estimated 100-year flood peak at that site, and was about twice as large as the previous maximum which occurred on September 13, 1977. The intense storm caused at least four deaths and estimated damage of \$20 million in the Kansas City metropolitan area. Significant flooding occurred in Clay, Jackson, and Cass Counties, north and south of Kansas City.

Runoff from heavy rains on August 7 in the Chicago area caused severe flooding on several small streams. For example, the estimated peak discharge of 980 cubic feet per second in Addison Creek at Bellwood, Illinois (drainage area, 17.9 square miles) was greater than a 100-year flood event and was highest in period of record that began in 1950. The previous maximum of 706 cubic feet per second occurred on September 17, 1972.

Runoff from intense rains of 7 to 8 inches on August 16 caused severe flooding in parts of Macon, Trousdale, Smith, and Jackson Counties in north-central Tennessee. Severe damage was reported in Pleasant Shade, in northern Smith County, in the Peyton Creek basin. On August 17, another intense storm produced flooding along a wide band from Cumberland County southwest to Hamilton County. Flooding occurred in the North Chickamauga Creek basin as a result of runoff from that storm.

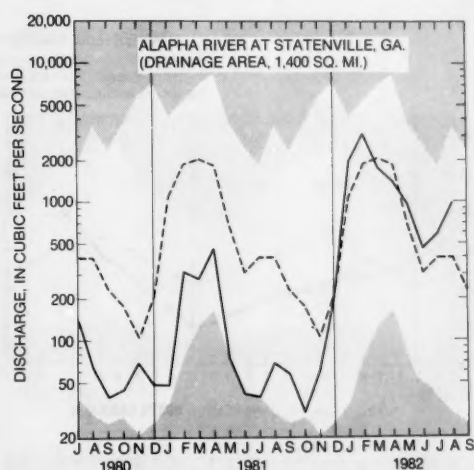
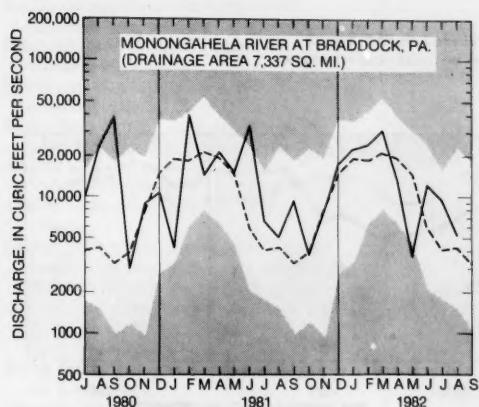
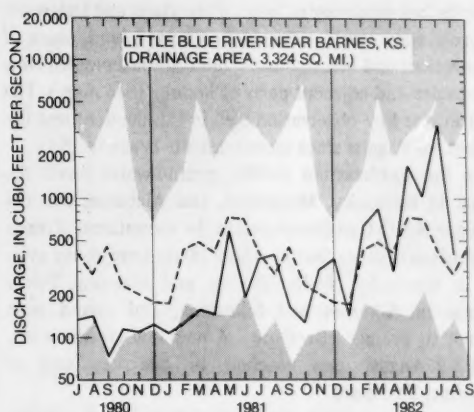
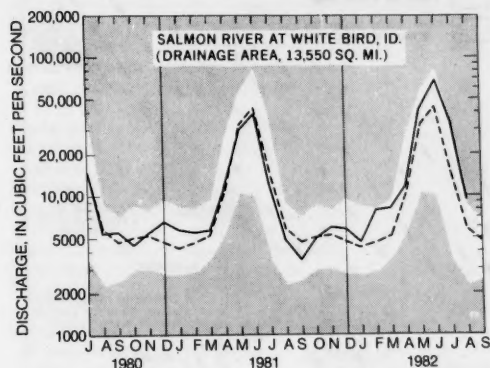
Local flooding occurred throughout Nevada as a result of scattered intense thunderstorms during the month. Flash flooding was reported by the National Weather Service in Clark County in the southern part of the State on August 24. Two deaths resulted from that storm in the Las Vegas area. In the north-central part of the State, monthly mean flow of Humboldt River at Palisade decreased seasonally but remained above the long-term median for the seventh consecutive month.

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SURFACE WATER – MONTHLY MEAN DISCHARGE IN KEY STREAMS

Unshaded area indicates range between highest and lowest record for the month. Dashed line indicates median of monthly values for reference period, 1951–80. Heavy line indicates mean for current period.



Reservoir storage generally decreased during August but was above the long-term average at most of the index reservoirs.

The above-normal trend in streamflow was again reflected in the combined flow of three large rivers—Mississippi, St. Lawrence, and Columbia—which averaged

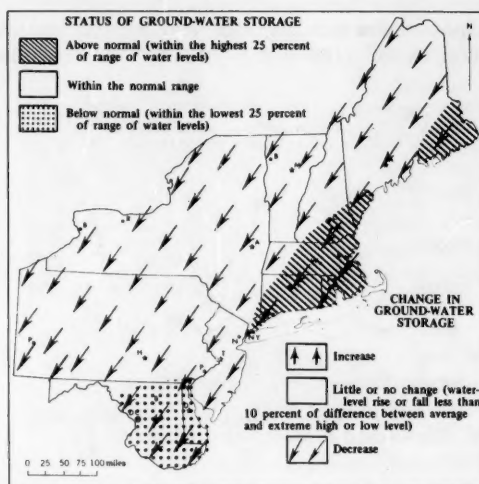
874,100 cubic feet per second during the month, down 29 percent from July, but still 20 percent above normal for August. These three rivers, which together drain more than half of the conterminous United States, provide a quick, useful check on the status of the nation's water-resource conditions.

GROUND-WATER CONDITIONS DURING AUGUST 1982

In the northeastern States, ground-water levels continued to decline seasonally. Levels near end of month were near average for August in most of the region, but were far below average in most of Maryland and Delaware. Above-average levels persisted in Rhode Island, much of Connecticut and Massachusetts, and in southeastern New Hampshire and adjacent parts of Maine. (See map.) The level in one key observation well in Connecticut was the highest for August since measurements began in 1943.

In the southeastern States, ground-water levels declined in Kentucky, Mississippi, and Alabama, and declined in North Carolina except in the mountains. Trends were mixed in other States. Water levels were above average in Kentucky, North Carolina, and Alabama, below average in Arkansas and Louisiana, and mixed with respect to average elsewhere. A new low ground-water level for August was reached in the key well at Memphis, Tennessee.

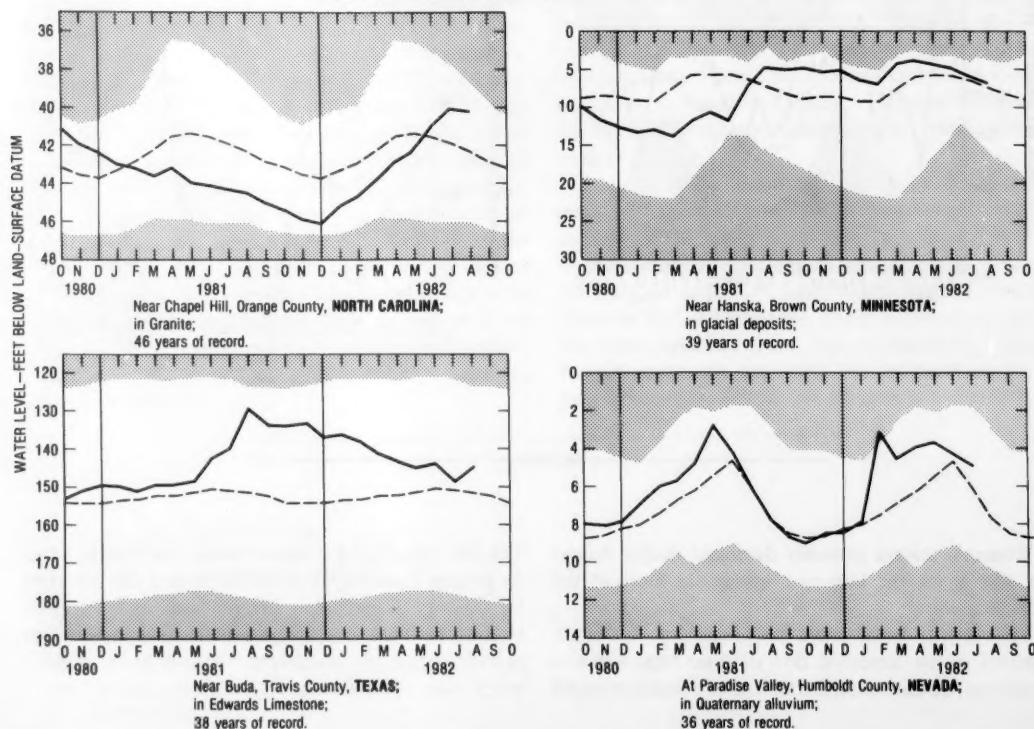
Among the Great Lakes States, including also Iowa, ground-water levels generally declined seasonally in all



Map shows ground-water storage near end of August and change in ground-water storage from end of July to end of August.

MONTH-END GROUND-WATER LEVELS IN KEY WELLS

UNSHADED AREA INDICATES RANGE BETWEEN HIGHEST AND LOWEST RECORD FOR THE MONTH
DOTTED LINE INDICATES AVERAGE OF MONTHLY LEVELS, IN PREVIOUS YEARS
HEAVY LINE INDICATES LEVEL FOR CURRENT PERIOD



**WATER LEVELS IN KEY OBSERVATION WELLS IN SOME REPRESENTATIVE AQUIFERS IN
THE CONTERMINOUS UNITED STATES**

Aquifer and location	Current water level in feet below land-surface datum	Departure from average in feet	Net change in water level in feet since:		Year records began	Remarks
			Last month	Last year		
Glacial drift at Hanska, south-central Minnesota	-7.52	-0.19	-1.52	-2.67	1943	
Glacial drift at Roscommon in north-central part of Lower Peninsula, Michigan (U.S. well no. 1)	-4.85	+0.16	-0.39	+0.11	1935	
Glacial drift at Marion, Iowa (U.S. well no. 1)	-4.18	+2.04	-2.44	+0.41	1941	
Glacial drift at Princeton in northwestern Illinois (U.S. well no. 1)	-9.44	+3.67	-2.46	-2.89	1943	
Petersburg Granite, southeastern Piedmont near Fall Zone, Colonial Heights, Virginia (U.S. well no. 4)	-15.22	+0.59	+0.22	+1.48	1939	
Glacial outwash sand and gravel, Louisville, Kentucky (U.S. Well no. 2)	-18.45	+7.32	-0.23	-0.80	1946	
500-foot sand aquifer near Memphis, Tennessee (U.S. well no. 2)	-104.00	-15.57	-0.27	-0.35	1941	August low.
Granite in eastern Piedmont Province, Chapel Hill, North Carolina (U.S. well no. 5)	-40.19	+2.06	-0.09	+4.34	1931	
Sparta Sand in Pine Bluff industrial area, Arkansas	-232.90	-28.35	-2.95	+7.65	1958	
Copper Ridge and Chepultepec Dolomites, Centreville, Alabama	-29.4	+0.5	-0.8	+0.6	1952	
Limestone aquifer on Cockspur Island, Savannah area, Georgia	-24.60	-5.94	-0.20	+1.33	1956	
Sand and gravel in Puget Trough, Tacoma, Washington	-106.08	+5.76	-1.50	+14.20	1952	
Pleistocene glacial outwash gravel, North Pole, northern Idaho (U.S. well no. 3)	-457.5	+1.0	+0.1	+7.6	1929	
Snake River Group: southwestern Snake River Plain aquifer, at Eden, Idaho	-123.7	-8.7	+2.1	-0.7	1957	August low.
Alluvial sand and gravel, Platte River Valley, Nebraska (U.S. well no. 6)	-2.17	+3.94	+1.50	+5.83	1935	
Alluvial valley fill in Steptoe Valley, Nevada	-11.84	-1.83	-0.55	+0.13	1950	August high.
Ogallala Formation, Kansas Agricultural Experiment Station at Colby in the High Plains of northwestern Kansas	-126.61	-8.60	-2.11	+0.31	1947	
Alluvium and Paso Robles, clay, sand, and gravel, Santa Maria Valley, California (U.S. well no. 11)	-126.85	+17.96	+25.82	-9.20	1957	
Valley fill, Elfrida area, Douglas, Arizona (U.S. well no. 15)	-116.9	-39.69	-1.3	-2.5	1951	Alltime low.
Berrendo-Smith well in San Andres Limestone, Roswell artesian basin of Pecos Valley, New Mexico (U.S. well no. 1-A)	-68.36	+0.14	-0.68	-2.03	1966	
Hueco bolson, El Paso area, Texas	-263.27	-17.08	-0.03	-3.43	1965	Alltime low.
Evangelina aquifer, Houston area, Texas	-325.13	-25.88	+0.27	-4.53	1965	

States except Minnesota, where trends were mixed. Levels were above average in Illinois and Iowa, above and below average in Michigan, about average in Wisconsin, and below average in Minnesota and Ohio. A new low level for August was reached in a key well in central Minnesota.

Among the western States, ground-water levels rose in all but one of the key wells in Idaho, and declined in

Washington, North Dakota, Kansas, and in most of Nebraska and New Mexico. Trends were mixed in other States. Levels were below average in Arizona and mixed with respect to average in other States. A new high ground-water level for August was recorded in Nevada, and new lows for August occurred in Idaho and New Mexico. New alltime lows were recorded in Arizona and Texas.

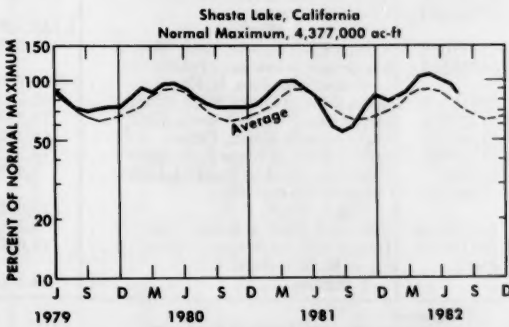
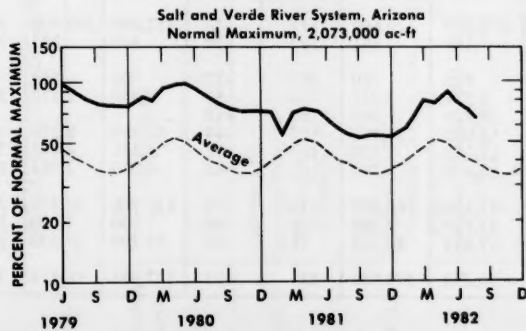
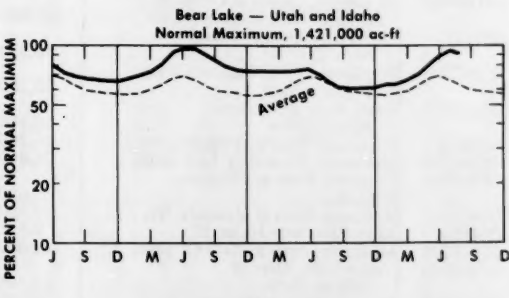
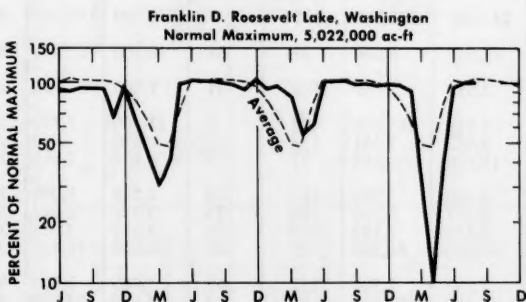
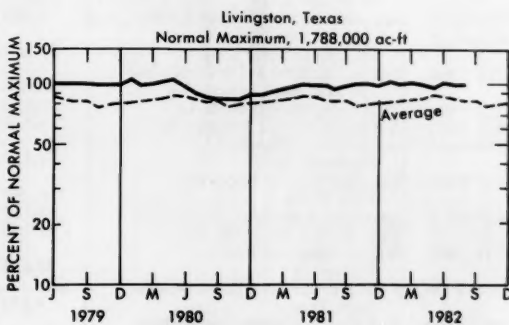
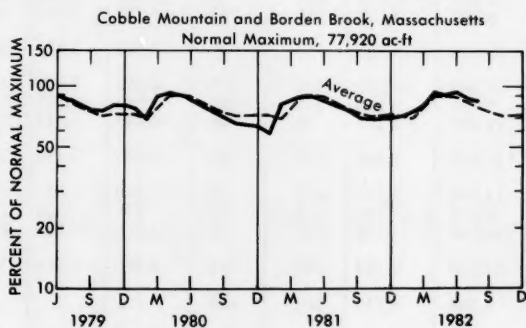
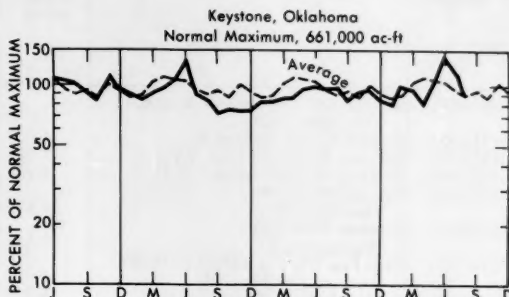
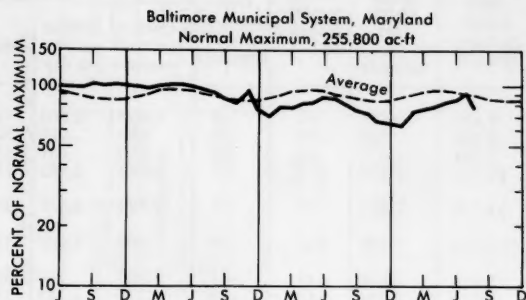
USABLE CONTENTS OF SELECTED RESERVOIRS NEAR END OF AUGUST

[Contents are expressed in percent of reservoir capacity. The usable storage capacity of each reservoir is shown in the column headed "Normal maximum."]

Principal uses: F—Flood control I—Irrigation M—Municipal P—Power R—Recreation W—Industrial	Reservoir				Percent of normal maximum	Normal maximum (acre-feet) ^a	Principal uses: F—Flood control I—Irrigation M—Municipal P—Power R—Recreation W—Industrial	Reservoir				Percent of normal maximum	Normal maximum (acre-feet) ^a
	End of Aug. 1982	End of Aug. 1981	Average for end of Aug.	End of Aug. 1982				End of Aug. 1982	End of Aug. 1981	Average for end of Aug.	End of Aug. 1982		
NORTHEAST REGION													
NOVA SCOTIA													
Rossignol, Mulgrave, Falls Lake, St. Margaret's Bay, Black, and Ponhook Reservoirs (P)	55	49	49	64	b226,300	MIDCONTINENT REGION—Continued							
SOUTH DAKOTA—Continued													
Lake Sharpe (FIP)	100	101	100	99	1,725,000	NEBRASKA							
Lewis and Clarke Lake (FIP)	94	92	96	89	477,000	Lake McConaughy (IP)							
74 75 68 78 1,948,000													
OKLAHOMA													
Eufaula (FPR)	83	84	81	98	2,378,000	OKLAHOMA—TEXAS							
Keystone (FPR)	91	96	90	113	661,000	Lake Texoma (FMPRW)							
Tenkiller Ferry (FPR)	94	101	91	104	628,200	95 88 92 99 2,722,000							
Lake Altus (FIMR)	72	8	48	93	133,000	TEXAS							
Lake O'The Cherokees (FFPR)	86	90	83	93	1,492,000	Bridgeport (IMW)							
99 30 45 100 386,400													
Canyon (FMR)													
94 94 74 94 385,600													
International Amistad (FIMPW)													
93 101 82 97 3,497,000													
International Falcon (FIMPW)													
100 106 67 91 2,668,000													
Livingston (IMW)													
100 96 83 100 1,788,000													
Possum Kingdom (IMPRW)													
92 89 99 94 570,200													
Red Bluff (PI)													
14 17 22 13 307,000													
Toledo Bend (P)													
88 88 84 94 4,472,000													
Twin Buttes (FIM)													
43 40 28 49 177,800													
Lake Kemp (IMW)													
94 60 83 101 268,000													
Lake Meredith (FWM)													
47 31 39 40 796,900													
Lake Travis (FIMPRW)													
103 90 75 95 1,144,000													
THE WEST													
WASHINGTON													
Ross (PR)	98	98	94	100	1,052,000	IDAHO							
Franklin D. Roosevelt Lake (IP)	100	103	104	100	5,022,000	Boise River (4 reservoirs) (FIP)							
Lake Chelan (PR)	84	99	94	99	676,100	Coeur d'Alene Lake (P)							
Lake Cushman (PR)	102	97	96	103	359,500	98 98 75 98 238,500							
Lake Merwin (P)	104	107	103	105	245,600	Pend Oreille Lake (FP)							
98 99 100 99 1,561,000													
IDAHO—WYOMING													
Upper Snake River (8 reservoirs) (MP)	82	47	55	93	4,401,000	WYOMING							
Boysen (FIP)													
100 90 86 101 802,000													
Buffalo Bill (IP)													
98 74 89 104 421,300													
Keyhole (F)													
29 26 47 30 190,400													
Pathfinder, Seminole, Alcona, Kortez, Glendo, and Guernsey Reservoirs (I)													
54 45 48 62 3,056,000													
COLORADO													
John Martin (FIR)	3	9	16	6	364,400	COLORADO RIVER STORAGE PROJECT							
Taylor Park (IR)	84	60	77	83	106,200	Lake Powell; Flaming Gorge, Fontenelle, Navajo, and Blue Mesa Reservoirs (IFPR)							
Colorado—Big Thompson project (I)	33	55	63	53	722,600	92 82 . . . 92 31,620,000							
UTAH—IDAHO													
Bear Lake (IPR)	91	65	62	92	1,421,000	CALIFORNIA							
Folsom (FIP)													
87 62 67 94 1,000,000													
Hetch Hetchy (MP)													
98 75 69 100 360,400													
Isabella (FIR)													
74 32 31 92 568,100													
Pine Flat (FI)													
69 31 41 92 1,001,000													
Clair Engle Lake (Lewiston) (P)													
93 78 78 98 2,438,000													
Lake Almar (P)													
97 75 56 105 1,036,000													
Lake Berryessa (FIMW)													
92 76 78 95 1,600,000													
Millerton Lake (FI)													
76 36 42 100 503,200													
Shasta Lake (FIPR)													
86 59 70 94 4,377,000													
CALIFORNIA—NEVADA													
Lake Tahoe (IFR)	92	36	61	97	744,600	NEVADA							
Rye Patch (I)													
92 44 60 91 194,300													
ARIZONA—NEVADA													
Lake Mead and Lake Mohave (FIMP)	86	83	72	85	27,970,000	ARIZONA							
San Carlos (IP)													
9 29 14 13 1,073,000													
Salt and Verde River system (IMPR)													
68 55 39 73 2,073,000													
NEW MEXICO													
Conchas (FIR)	74	45	85	60	330,100	NEW MEXICO							
Elephant Butte and Caballo (FIPR)	32	32	25	35	2,453,000								

^a 1 acre-foot = 0.0436 million cubic feet = 0.326 million gallons = 0.504 cubic feet per second day.^b Thousands of kilowatt-hours (the potential electric power that could be generated by the volume of water in storage).

USABLE CONTENTS OF SELECTED RESERVOIRS AND RESERVOIR SYSTEMS, JUNE 1979 TO AUGUST 1982



FLOW OF LARGE RIVERS DURING AUGUST 1982

Station number	Stream and place of determination	Drainage area (square miles)	Mean annual discharge through September 1980 (cubic feet per second)	August 1982					Date	
				Monthly mean discharge (cubic feet per second)	Percent of median monthly discharge, 1951-80	Change in discharge from previous month (percent)	Discharge near end of month			
							Cubic feet per second	Million gallons per day		
01014000	St. John River below Fish River at Fort Kent, Maine	5,690	9,647	2,694	65	-5	4,000	2,600	31	
01318500	Hudson River at Hadley, N.Y.	1,664	2,909	728	69	-30	650	420	31	
01357500	Mohawk River at Cohoes, N.Y.	3,456	5,734	1,070	66	-54	560	361	31	
01463500	Delaware River at Trenton, N.J.	6,780	11,750	5,338	117	-27	4,620	2,985	31	
01570500	Susquehanna River at Harrisburg, Pa.	24,100	34,530	7,560	87	-57	5,500	3,550	30	
01646500	Potomac River near Washington, D.C.	11,560	¹ 11,490	4,190	120	-34	2,480	1,602	31	
02105500	Cape Fear River at William O. Huske Lock near Tarheel, N.C.	4,810	5,005	2,800	111	-10	1,100	710	30	
02131000	Pee Dee River at Peedee, S.C.	8,830	9,851	6,080	113	-12	4,270	2,759	29	
02226000	Altamaha River at Doctortown, Ga.	13,600	13,880	7,506	126	-9	5,460	3,528	30	
02320500	Suwannee River at Branford, Fla.	7,880	6,987	7,150	130	+35	6,580	4,252	31	
02358000	Apalachicola River at Chattahoochee, Fla.	17,200	22,570	21,300	159	+37	13,100	8,470	31	
02467000	Tombigbee River at Demopolis lock and dam near Coatopa, Ala.	15,400	23,300	8,750	184	+20	4,950	3,199	27	
02489500	Pearl River near Bogalusa, La.	6,630	9,768	5,590	207	+121	1,980	1,279	31	
03049500	Allegheny River at Natrona, Pa.	11,410	¹ 19,480	5,309	96	-44	4,880	3,154	25	
03085000	Monongahela River at Braddock, Pa.	7,337	¹ 12,510	5,348	125	-43	5,400	3,490	25	
03193000	Kanawha River at Kanawha Falls, W. Va.	8,367	12,590	5,235	116	-18	3,040	1,964	25	
03234500	Scioto River at Higby, Ohio.	5,131	4,547	896	72	-45	875	565	31	
03294500	Ohio River at Louisville, Ky ²	91,170	116,000	31,340	85	-38	31,000	20,000	25	
03377500	Wabash River at Mount Carmel, Ill.	28,635	27,220	9,962	109	-58	8,900	5,750	31	
03469000	French Broad River below Douglas Dam, Tenn.	4,543	6,798	6,531	202	+59	.....	.....	...
04084500	Fox River at Rapide Croche Dam, near Wrightstown, Wis ²	6,150	4,163	2,467	114	-19	1,398	903	23	
04264331	St. Lawrence River at Cornwall, Ontario—near Massena, N.Y. ³	299,000	242,700	277,700	105	-5	277,000	179,000	31	
050115	St. Maurice River at Grand Mere, Quebec	16,300	25,150	5,290	31	-39	16,200	10,470	30	
05082500	Red River of the North at Grand Forks, N. Dak.	30,100	2,551	1,880	164	-41	1,400	900	24	
05133500	Rainy River at Manitou Rapids, Minn.	19,400	12,830	15,000	149	0	11,400	7,370	28	
05330000	Minnesota River near Jordan, Minn.	16,200	3,402	1,461	112	-63	836	540	28	
05331000	Mississippi River at St. Paul, Minn.	36,800	¹ 10,610	5,658	77	-53	4,110	2,656	27	
05365500	Chippewa River at Chippewa Falls, Wis.	5,600	5,100	2,948	101	-14	1,550	1,001	21	
05407000	Wisconsin River at Muscoda, Wis.	10,300	8,617	5,520	104	-10	3,910	2,527	23	
05446500	Rock River near Joslin, Ill.	9,551	5,873	7,140	222	-31	5,150	3,328	31	
05474500	Mississippi River at Keokuk, Iowa	119,000	62,620	54,300	135	-46	48,600	31,410	31	
06214500	Yellowstone River at Billings, Mont.	11,796	7,038	8,300	152	-69	5,900	3,810	31	
06934500	Missouri River at Hermann, Mo.	524,200	79,490	103,700	185	-23	145,000	93,700	31	
07289000	Mississippi River at Vicksburg, Miss ⁴	1,140,500	576,600	429,600	131	-27	372,000	240,400	30	
07331000	Washita River near Dickson, Okla.	7,202	1,368	691	197	-70	344	222	31	
08276500	Rio Grande below Taos Junction Bridge, near Taos, N. Mex.	9,730	725	760	263	-27	700	450	31	
09315000	Green River at Green River, Utah.	40,600	6,298	3,727	116	-50	3,370	2,178	24	
11425500	Sacramento River at Verona, Calif.	21,257	18,820	17,860	166	+18	.....	.....	...
13269000	Snake River at Weiser, Idaho	69,200	18,050	11,900	107	-44	12,810	8,279	29	
13317000	Salmon River at White Bird, Idaho	13,550	11,250	9,530	165	-71	6,460	4,175	29	
13342500	Clearwater River at Spalding, Idaho	9,570	15,480	5,266	127	-65	4,010	2,591	29	
14105700	Columbia River at The Dalles, Oreg ⁵	237,000	193,100	166,800	116	-53	130,700	84,470	25	
14191000	Willamette River at Salem, Oreg.	7,280	23,510	4,268	106	-40	7,900	5,110	25	
15515500	Tanana River at Nenana, Alaska.	25,600	23,460	47,525	86	-22	37,700	24,370	31	
8MF005	Fraser River at Hope, British Columbia.	83,800	96,290	173,725	137	-32	117,935	76,223	30	

¹ Adjusted.² Records furnished by Corps of Engineers.³ Records furnished by Buffalo District, Corps of Engineers, through International St. Lawrence River Board of Control. Discharges shown are considered to be the same as discharge at Ogdensburg, N.Y. when adjusted for storage in Lake St. Lawrence.⁴ Records of daily discharge computed jointly by Corps of Engineers and Geological Survey.⁵ Discharge determined from information furnished by Bureau of Reclamation, Corps of Engineers, and Geological Survey.

DISSOLVED SOLIDS AND WATER TEMPERATURES FOR AUGUST AT DOWNSTREAM SITES ON SIX LARGE RIVERS

Station number	Station name	August data of following calendar years	Stream discharge during month Mean (cfs)	Dissolved-solids concentration during month ^a		Dissolved-solids discharge during month ^a				Water temperature during month ^b	
				Minimum (mg/L)	Maximum (mg/L)	Mean	Minimum (tons per day)	Maximum		Mean, in °C	Maximum, in °C
01463500	NORTHEAST Delaware River at Trenton, N.J. (Morrisville, Pa.)	1982	5,338	111	132	1,780	1,292	3,977		24.5	27.0
		1945-81 (Extreme yr)	6,174	67 (1945)	158 (1967)	.....	505 (1965)	21,500 (1955)		.....	31.5
04264331	St. Lawrence River at Cornwall, Ontario, near Massena, N.Y. median streamflow at Ogdensburg, N.Y.	1982	278,000	165	166	124,000	122,000	126,000		20.5	21.5
		1976-81 (Extreme yr)	285,400	164 (1981)	170 (1978)	128,000	113,000 (1977)	153,000 (1976)		21.5	24.0
07289000	SOUTHEAST Mississippi River at Vicksburg, Miss.	1982	429,600	215	299	301,000	226,000	348,000		29.0	31.5
		1976-81 (Extreme yr)	403,000	200 (1980)	290 (1978)	258,000	118,000 (1977)	442,000 (1979)		29.5	34.0
03612500	WESTERN GREAT LAKES REGION Ohio River at lock and dam 53, near Grand Chain, Ill. (25 miles west of Paducah, Ky.; streamflow station at Metropolis, Ill.)	1982	*122,000	153	196	.....	27,000	73,500		.....	29.0
		1955-81 (Extreme yr)	139,300	128 (1963)	339 (1977)	.....	4,490 (1981)	246,000 (1958)		.....	30.5
06934500	MIDCONTINENT Missouri River at Hermann, Mo. (60 miles west of St. Louis, Mo.)	1982	104,000	247	455	95,500	65,500	180,000		26.0	31.0
		1976-81 (Extreme yr)	65,820	218 (1981)	535 (1979)	69,500	43,000 (1977)	125,000 (1981)		27.0	30.0
14128910	WEST Columbia River at Warrendale, Oreg. (streamflow station at The Dalles, Oreg.)	1982	159,000	80	82	34,800	19,900	49,300		20.5	21.5
		1976-81 (Extreme yr)	137,000	71 (1976)	100 (1977)	32,200	14,200 (1978)	52,500 (1976)		20.5	22.0

^a Dissolved-solids concentrations when not analyzed directly, are calculated on basis of measurements of specific conductance.^b To convert °C to °F: [(1.8 X °C) + 32] = °F.^c Median of monthly values for 30-year reference period, water years 1951-80, for comparison with data for current month.^{*} Maximum and minimum dissolved solids discharge are for the first 21 days of the month.

SUMMARY APPRAISALS OF THE NATION'S GROUND-WATER RESOURCES— NEW ENGLAND REGION

The abstract and illustrations below are from the report, *Summary appraisals of the Nation's ground-water resources—New England Region*, by Allen Sinnott: U.S. Geological Survey Professional Paper 813-T, 23 pages, 1982. This report may be purchased for \$3.50 from the Eastern Distribution Branch, Text Products Section, U.S. Geological Survey, 604 South Pickett St., Alexandria, VA 22304 (check or money order payable to U.S. Geological Survey); or from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 (payable to Superintendent of Documents).

ABSTRACT

The New England Region has a total area of about 62,400 square miles (160,000 km²) and includes the States of Maine and New Hampshire, eastern Vermont, most of Massachusetts and Connecticut, all of Rhode Island, and a small part of southeastern New York. (See figures 1 and 2.) The longest stream is the Connecticut River, which extends from northern Vermont and New Hampshire, through western Massachusetts and central Connecticut, and drains into Long Island Sound. Other major streams are the Penobscot and Kennebec Rivers in Maine, the Androscoggin in Maine and New Hampshire, the Merrimack in New Hampshire and Massachusetts, and the Housatonic in western Massachusetts and Connecticut. Of the smaller streams, some like the Charles

River in the Boston area, are widely known because of their proximity to large population centers.

Ground water occurs in two types of geologic materials: consolidated rocks and unconsolidated sedimentary rocks. The consolidated rocks underlie the entire region. They include crystalline igneous and metamorphic rocks and consolidated sedimentary rocks—shale, sandstone, and limestone and other carbonate rocks. The most productive unconsolidated rocks are sand and gravel of glacial origin. These deposits occur all over Cape Cod and nearby islands in southeastern Massachusetts and in many valleys throughout the region.

Ground water is derived from precipitation. It can be intercepted for use by pumping from wells (1) before it discharges to the streams as base flow and (2) before it drains directly into coastal wetlands, bays, Long Island Sound, or the ocean.

Withdrawals of fresh ground water in 1975 aggregated about 220 billion gallons (830 hm³), or about 12 percent of the total freshwater withdrawals (from all sources) of 1,800 billion gallons (6,800 hm³). In view of the available ground-water reserves, considerable additional water, for the anticipated continuing increase in population and economic activity, could be developed.

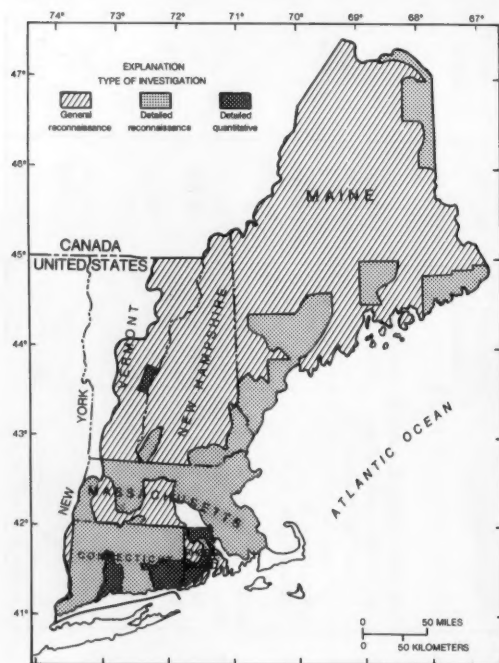


Figure 1.—Ground-water investigations that have been made in the New England Region as of 1981.

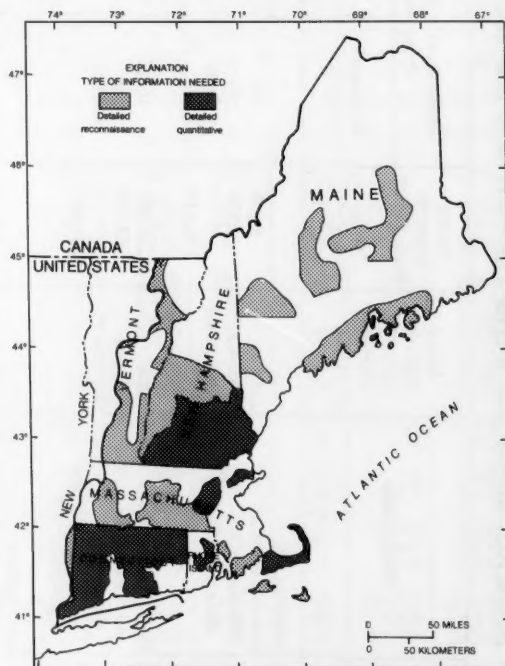


Figure 2.—Additional ground-water information is needed in parts of the New England Region to assist water-resources development and management.

NATIONAL WATER CONDITIONS

August 1982

Based on reports from the Canadian and U.S. Field offices; completed September 10, 1982

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EXPLANATION OF DATA

Cover map shows generalized pattern of streamflow for the month based on 18 index stream-gaging stations in Canada and 164 index stations in the United States. Alaska and Hawaii inset maps show streamflow only at the index gaging stations that are located near the points shown by the arrows.

Streamflow for the current month is compared with flow for the same month in the 30-year reference period, 1951–80. Streamflow is considered to be *below the normal range* if it is within the range of the low flows that have occurred 25 percent of the time (below the lower quartile) during the reference period. Flow is considered to be *above the normal range* if it is within the range of the high flows that have occurred 25 percent of the time (above the upper quartile).

Flow higher than the lower quartile but lower than the upper quartile is described as being *within the normal range*. In the National Water Conditions, the median is obtained by ranking the 30 flows for each month of the reference period in their order of magnitude; the highest flow is number 1, the lowest flow is number 30, and the average of the 15th and 16th highest flows is the

median. One-half of the time you would expect the flows for the month to be below the median and one-half of the time to be above the median.

Statements about *ground-water levels* refer to conditions near the end of the month. The water level in each key observation well is compared with average level for the end of the month determined from the entire past record for that well or from a 30-year reference period, 1951–80. *Changes in ground-water levels*, unless described otherwise, are from the end of the previous month to the end of the current month.

Dissolved solids and temperature data for August are given for six stream-sampling sites that are part of the National Stream Quality Accounting Network (NASQAN). Dissolved solids are minerals dissolved in water and usually consist predominantly of silica and ions of calcium, magnesium, sodium, potassium, carbonate, bicarbonate, sulfate, chloride, and nitrate. Dissolved-solids discharge represents the total daily amount of dissolved minerals carried by the stream. Dissolved-solids *concentrations* are generally higher during periods of low streamflow, but the highest dissolved-solids *discharges* occur during periods of high streamflow because the total quantities of water, and therefore total load of dissolved minerals, are so much greater than at time of low flow.

METRIC EQUIVALENTS OF UNITS USED IN THE NATIONAL WATER CONDITIONS

1 foot = 0.3048 meter

1 acre-foot = 1,233 cubic meters

1 million cubic feet = 28,320 cubic meters

1 cubic foot per second =
0.02832 cubic meters per second =
1.699 cubic meters per minute

1 cubic foot per second · day = 2,447 cubic meters

1 mile = 1.609 kilometers

1 square mile = 259 hectares = 2.59 square kilometers

1 million gallons = 3,785 cubic meters =
3.785 million liters

1 million gallons per day = 694.4 gallons per minute =
2.629 cubic meters per minute =
3,785 cubic meters per day

(Round-number conversions, to nearest four significant figures)

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